

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-15. (canceled)

16. (currently amended) An electromechanical actuator for regulating a turbocharger of an internal combustion engine, comprising:

a solenoid with having a sliding ferromagnetic nucleus therein, said sliding ferromagnetic nucleus is balanced by a spring and supplied with a rod at a first end thereof that interacts with a pivot point of the turbocharger;

a sensing system for sensing a position occupied by the ferromagnetic nucleus in the solenoid, said sensing system being outside a boundary defined by said solenoid; and

an electronic circuit which receives a first signal from the engine's electronic control unit and a feedback signal corresponding to a position of the ferromagnetic nucleus in the solenoid and that transmits to the solenoid a second signal for controlling a magnetic field produced by the solenoid.

17. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the solenoid further comprises a coil made of conducting wire, said wire is one of

sheathed and treated with insulating material so that the solenoid is usable at high temperatures.

18. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the sensing system comprises a position sensor for controlling the position of the ferromagnetic nucleus in the solenoid.

19. (previously presented) The electromechanical actuator as claimed in claim 18, wherein the position sensor comprises a linear type resistor.

20. (previously presented) The electromechanical actuator as claimed in claim 18, wherein the position sensor comprises a capacitive element.

21. (previously presented) The electromechanical actuator as claimed in claim 18, wherein the position sensor comprises an element that measures the inductance of the solenoid upon the variation of the position of the ferromagnetic nucleus.

22. (currently amended) The electromechanical actuator as claimed in claim 16, wherein the spring surrounds the rod and ~~is capable of pushing~~ pushes the ferromagnetic nucleus to a resting position.

23. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the electronic circuit comprises one control part and one power part from which the solenoid is fed.

24. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the electronic circuit comprises one control part with at least two entries, said one control part receives the signal from the engine's electronic control unit in one of said two entries and receives, through the sensor, the feedback signal corresponding to the position of the ferromagnetic nucleus in the solenoid in the other one of said two entries.

25. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the electronic circuit comprises one control part that sends the electric current to the solenoid and that is linked to signals applied to entries of the one control part.

26. (previously presented) The electromechanical actuator as claimed in claim 16, wherein the electronic circuit comprises one control part having a differential amplifier unit which receives the signal from the engine's electronic control unit and the feedback signal coming from the sensor, and supplies, through a power amplifier part, a current with which the solenoid is controlled.

27. (previously presented) The electromechanical actuator as claimed in claim 16, further comprising means for anchoring the solenoid on the turbocharger.

28. (previously presented) The electromechanical actuator as claimed in claim 27, wherein said means for actuating is a flange type means for anchoring on the turbocharger.

29. (new) The electromechanical actuator as claimed in claim 16, further comprising a lever connected to a second end of said sliding ferromagnetic nucleus and making electrical contact with said sensing system.

30. (new) An electromechanical actuator for regulating a turbocharger of an internal combustion engine, comprising:

a solenoid;

a substantially solid ferromagnetic nucleus axially slid able within said solenoid, said ferromagnetic nucleus being balanced by a spring and having a rod at a first end thereof, the rod interacting with a pivot point of the turbocharger;

a sensing system for sensing a position occupied by the ferromagnetic nucleus in the solenoid; and

an electronic circuit which receives a first signal from the engine's electronic control unit and a feedback signal corresponding to a position of said ferromagnetic nucleus in said solenoid and that transmits to said solenoid a second signal for controlling a magnetic field produced by said solenoid.

31. (new) The electromechanical actuator as claimed in claim 30, further comprising a lever connected to a second end of said sliding ferromagnetic nucleus and making electrical contact with said sensing system.